

MISSOURI CONSERVATIONIST

VOLUME 80, ISSUE 1, JANUARY 2019
SERVING NATURE & YOU





DISCOVER NATURE Notes

spend a moment in nature



Each week, Discover Nature Notes takes you outdoors in nature through stunning photos, video, and audio. You'll see the sights and hear the sounds of animals in the wild. Discover nearby hiking trails, find where you can see migrating ducks, learn that Missouri has freshwater shrimp, swamps, champion trees, and more ...

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Contents

JANUARY 2019
VOLUME 80, ISSUE 1



FEATURES

11 Annual Review

Serving Nature and You: Fiscal
Year July 1, 2017–June 30, 2018.

DEPARTMENTS

- 2 Inbox
- 3 Up Front
With Sara Parker Pauley
- 4 Nature Lab
- 5 In Brief
- 28 Get Outside
- 30 Places To Go
- 32 Wild Guide
- 33 Outdoor Calendar



MISSOURI CONSERVATIONIST



ON THE COVER

Turtle Spring Branch at
Smith Conservation Area
in Moniteau County

DAVID STONNER

16–35mm lens, f/11
1/80 sec, ISO 100

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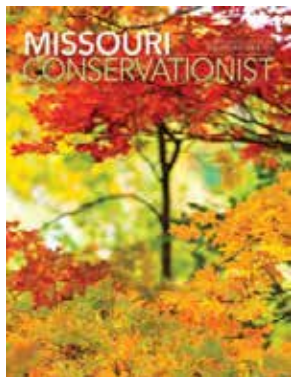
Inbox



Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

MISSOURI
CONSERVATIONIST
PO BOX 180
JEFFERSON CITY, MO 65102



TREES AND ANIMALS

I really enjoyed the October magazine. Very informative! Love the trees and animal pictures. Keep up the good work.

Mary Ginter
Salisbury

BIRDS OF A FEATHER

A neighbor called us to see a large owl that was in a tree outside her window. It was a rare opportunity. My daughter, a volunteer for a local wildlife rescue organization, identified the owl as a barred owl. A blue jay was squawking at the owl who in turn seemed to be saying, "Whatever, oh hum." It just so happened, that afternoon the November *Missouri Conservationist* arrived in the mail. I was surprised to see the barred owl on the back cover. Just a strange coincidence. I am always amazed at the high-quality photos in each issue. Thanks for doing a great job!

Ron Hartmann Affton

I always thoroughly enjoy the *Missouri Conservationist*. I learn a lot from the articles and *Ask MDC*. I found the answer about bluebirds very informative [November, Page 6]. One of our winter enjoyments is watching the bluebirds. One of the best photos I ever got of a male and female eastern bluebird was in January 2014. I watched as bluebirds came to enjoy the dried mealworms at our kitchen window. A male and female bluebird perched on top of the shepherd's hook. She kept trying to get his attention. Initially, he wanted nothing to do with her. Then he turned towards her and the two shared an intimate moment gazing at each other. I was able to capture this moment.

Mike Conley via email

I am reading your recent magazine and see a story about Trumpeter Swans [*Thriving Private Wetlands for Wildlife*, November, Page 15], and I am excited to share that we have those swans here in our little Arrowhead Lakes every year. I am amazed at how many birds stop by our lake in the spring and fall. I always wondered about the swans and now I know how truly special they are. Thank you for a great story I could truly relate to.

Susan DeMuria via email

DEER IN THE CITY

I read the article on deer in the November issue [*White-Tailed Deer and the Wild Places They Shape*, Page 16]. It describes almost exactly what the deer have done to my yard and plantings. The deer come down the access road by the highway and directly across my lawn. They make a path, and they definitely fertilize the lawn. Tulips are a thing of the past as are hostas, daylilies, and even a Knock Out™ Rose. The deer are destroying a young hard maple by rutting and have destroyed a forsythia bush and a young dogwood tree by the same method. In the spring, our neighborhood is a deer nursery. Three fawns were dropped in our neighborhood this last spring and twin fawns the year before. Deer do shape wild places, but it's not only the wild places that they shape.

Nancy Lange Fenton

A number of special managed deer hunts are held in urban areas on state, county, and city properties where deer populations are high. Some governments allow the use of hunting equipment within their boundaries to manage deer populations. In addition, MDC biologists have worked with cities to change their ordinances to allow bowhunting. Before hunting in an urban area, search that city's local ordinances and visit short.mdc.mo.gov/Zwm for more information.

—THE EDITORS

THANKFUL FOR CONSERVATION

My friend Tyler and I recently took a day off work to explore our wonderful state. We shared a thermos of hot cocoa and many stories as we took dozens of pictures of the breathtaking and diverse landscapes our state has to offer. How fortunate we are to live in such a magical and vibrant state. The special memories of this trip will last us for many years. Thanks to MDC for helping preserve Missouri's amazing and unique natural beauty.

Jason R. Kansas City

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Have a Question for a Commissioner?

Send a note using our online contact form at mdc.mo.gov/commissioners.



Want to see your photos in the Missouri Conservationist?

Share your photos on Flickr at
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email Readerphoto@mdc.mo.gov,
or include the hashtag #mdcdiscovernature
on your Instagram photos.



1

1 | Northern shovellers
feeding by **tysonstark**,
via Instagram

2 | Coyote with frog
lunch on frozen
pond by **Cindy
Thomas**, via email

3 | High water ice
at Eagle Bluffs
Conservation
Area by **William
Allen**, via Flickr



2



3

MISSOURI CONSERVATION COMMISSIONERS



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Bedell



Marilynn
Bradford



David
Murphy



Nicole
Wood



Up Front

with Sara Parker Pauley

✖ **Back in the day, I was a competitive tennis player. So,** when I would spend time on Granny Elma's farm, she would make sure I continued to train, including a 5-mile daily run down to the lake and back. On one particularly busy day, the sun was beginning to wane before I'd had a chance to start my run. But my Granny wasn't one for excuses, so she told me I'd better get to it before dark. And so, I did.

On my return from the lake, the light was fading fast and darkness was settling in. Then I saw the headlights of Granny's old Duster coming to my rescue. Well, not exactly. "Keep running," she yelled out the window. "I've come to guide you home!" She turned the car around and drove behind me, providing much needed light. The best part of this story was yet to come. As we got closer to home, I saw the headlights drawing closer, then a honk of the horn and a yell that I will remember the rest of my life. "Sprint it on home, sister. Sprint it on home!" And so, I did.

In reading the *Annual Review* on Pages 11–27 with all the amazing conservation work accomplished this past year, including our partners providing much needed light to our path, I thought of this story. As the sun set on 2018, we tried our best as your Department of Conservation to sprint it on home. And so, we did.

Sara Parker Pauley

SARA PARKER PAULEY, DIRECTOR
SARA.PAULEY@MDC.MO.GOV

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Printed with soy ink



mdc.mo.gov 3

Nature LAB

by Bonnie Chasteen

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

CONSERVATION PLANNING

Ecological Site Descriptions

✳ Whether you're a private landowner applying for a cost-share program, a city planner, or a professional natural resources manager, you can benefit from using ecological site descriptions (ESD). These detailed reports can help you improve planning and decision-making for the future.

Doug Wallace, an ecologist with the U.S. Department of Agriculture's Natural Resources Conservation Service in Columbia, worked with MDC's Geographical Information Systems Specialist Alicia Struckhoff and dozens of other natural resource management specialists to develop Missouri's ecological site classification project.

"This multiagency team effort in Missouri has produced a classification framework that will help drive resource planning and management at a variety of scales, from ecoregion, to landscape, and finally to the farm and field size," Wallace said. "Now that we've completed ESDs for every acre in Missouri, the national effort is underway, and we hope to complete it in fiscal year 2020."

MDC's Struckhoff is excited about how ESDs can help anyone doing land management at any scale. Combining



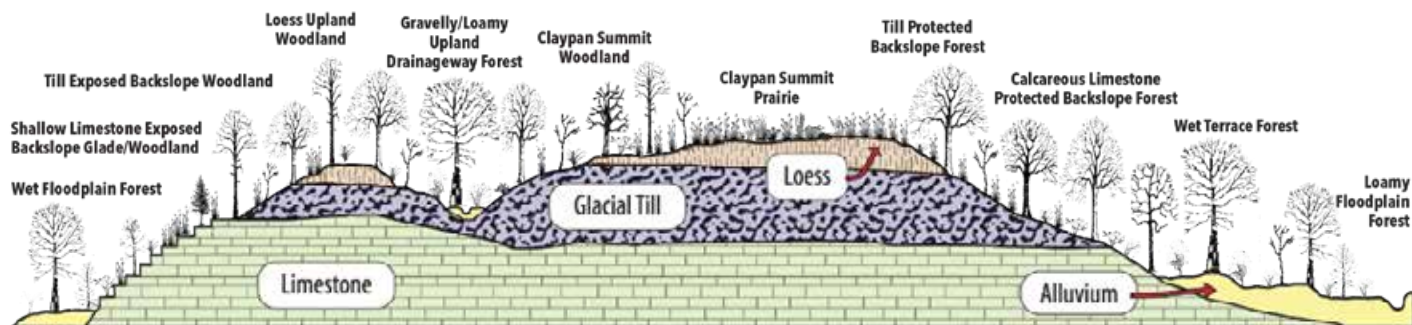
Researchers review a potential ecological site, a dolomite glade, at Peck Ranch Conservation Area.

NRCS and MDC led Missouri's work in this nationwide classification effort

information about soils, geology, hydrology, aspect, and natural community history, "ESDs help managers know what their sites can support," she said. "Was their land historically prairie, woodland, forest, or another type of natural community? The information helps them avoid trying to put trees into prairie soils, for example."

Wallace agreed. "ESDs help us put the right plants in the right place for the right purpose."

Two online ESD tools anyone can start using now are the Ecosystem Dynamics Interpretive Tool at short.mdc.mo.gov/ZpA and NRCS's Web Soil Survey at short.mdc.mo.gov/Zpd.



Ecological Site Descriptions At a Glance

Combining information about geology, soil types, hydrology, and natural communities, ESDs reveal a landscape's potential ecological sites.

Learn more at research.mdc.mo.gov

PHOTO: MDC STAFF; ILLUSTRATION COURTESY USDA NATURAL RESOURCES CONSERVATION SERVICE

In Brief

News and updates from MDC



Discover nature
through hunting.
Buy your permits
today.

BUY YOUR 2019 HUNTING AND FISHING PERMITS

ANNUAL PERMITS
EXPIRE AT THE END
OF FEBRUARY

➔ MDC reminds Missouri hunters and anglers that annual permits expire at the end of February, including 2018 permits for small game, fishing, trout fishing, and combination hunting and fishing.

Buy Missouri hunting and fishing permits from one of many vendors around the state, online at mdc.mo.gov/buypermits, or through MDC's free mobile apps, MO Hunting and MO Fishing, available for download through Google Play for Android devices or the App Store for Apple devices.

Save time by buying hunting and fishing permits for multiple people in a single transaction. Select the *Additional Customer* option during the permit purchase.

Commercial and lifetime permits can be purchased only through the MDC Permit Services Unit by calling 573-522-0107 for an application.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: Will prolonged days of below freezing weather slow the northward movement of the armadillo?

➔ Possibly, but it hasn't slowed them down much in Missouri. As you have noticed, our state is now home to nine-banded armadillos. Fifty years ago, they were not considered residents. These mammals first appeared in the south and southwest portions of Missouri in the mid-1970s. Since then, they have extended northward into almost every county south of the Missouri River, and many confirmed sightings have occurred in north Missouri. Scientists have seen a few in Iowa, and there are also reports from Nebraska. Whether those seen in Iowa or Nebraska came up on their own, or caught a ride in a vehicle, we don't know.

The armadillo's general lack of hair, combined with its low body-fat content, make it ill-equipped to handle extended periods of severely cold weather, which may limit the northward range of the species. The armadillo is active



Nine-banded armadillo

in the winter and must forage for food by digging in the soil or leaf litter for grubs, snails, and other invertebrates. At one time, it was thought frozen ground and a thick layer of snow cover would reduce the population for lack of food. However, based on visual reports at the time, a long snow cover in the late 1990s did not seem to diminish their movements north.

MDC scientists have not yet predicted how far north armadillos may ultimately extend their range.

Q: I've seen fewer wild turkeys in the last 10 years than the previous 10. What I have noticed is an explosion of raccoons. Has there been any research on the effect of nest-robbing predators on the turkey population?

➔ Wild turkey researchers have long known that predators, including raccoons, are the most common cause of nest loss. That said, some of the data we've collected about furbearer populations suggests raccoon numbers have increased in Missouri over the last several decades. Because these mammals are considered a primary predator of turkey nests, it is possible this increase has affected turkey hatches. It is also important to remember that turkeys and their nests are vulnerable to a wide variety of predators, including bobcats, coyotes, foxes, skunks,



Wild turkey

opossums, hawks, owls, snakes, and free-ranging dogs and cats, so it is difficult to implicate raccoons as the sole reason for poor turkey hatches and lower turkey numbers.

In addition to predators, other factors such as weather and habitat quality also influence turkey nest success. Research suggests cold, wet weather during spring and early summer leads to reduced turkey nest success and poult survival. Not surprisingly, other studies have shown turkey reproductive success is greater in areas that have better habitat. Because we can't control the weather, and because poor pelt prices don't support furbearer trapping, creating quality habitat remains the best way to

ARMADILLO: NOPPADOL PAOTHONG; TURKEY: JIM RATHER; LICHEN: CAROLYN CLAY



improve turkey nest success and poult survival. Thinning forests and providing open areas with native grasses and wildflowers are excellent ways to increase the turkey population. These areas provide cover for hen turkeys as they nest and rear their broods. They also provide an abundance of insects, which serve as the primary food source for young turkeys. So, despite higher numbers of raccoons, landowners can still promote greater turkey

nesting success and poult survival by improving habitat on their properties.

Q: What type of lichen is this?

➔ This is *Cladonia furcata*. This lichen is common on well-drained, but not dry, woodland slopes throughout the Ozarks where there is both moderately high light intensity and minimal competition from soft-stemmed plants. It grows mainly on soil, humus, or among mosses, and rarely on rotting wood.

AGENT ADVICE

from

Josh Roller

HARRISON COUNTY
CONSERVATION AGENT

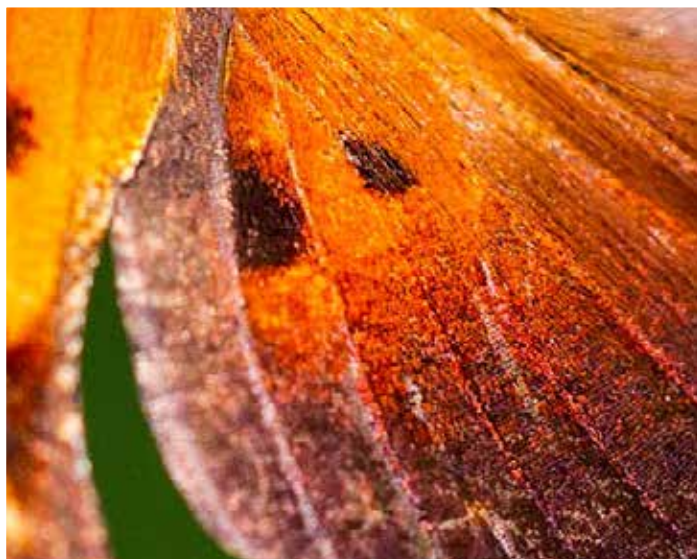
Coyotes are abundant statewide. Though coyotes can be hunted year-round — with a few exceptions — the late winter conditions make it a perfect time to manage this predator population. The cold temperatures keep coyotes on the move, which can make for an exciting hunt. Coyotes, much like foxes and bobcats, are pursued for their valuable pelts, to alleviate destruction to domestic livestock, and for the sporting opportunity they provide. Predator hunting can be done solo or with family and friends and requires little gear. They are active during daylight and dusk hours along brushy areas, edges of timber, and open agricultural areas. For more information, including season restrictions, visit mdc.mo.gov/hunting-trapping/species/coyote.



What IS it?

Can you guess this month's natural wonder?

The answer is on
Page 9.



WE ARE CONSERVATION

Spotlight on
people and partners

Bob Kendrick

➔ Kendrick is a conservation leader in Monroe County. He works to raise funds that help the Army Corps of Engineers improve Mark Twain Lake's natural diversity and recreation opportunities. In 2018, he helped charter the Northeast Missouri Master Naturalist chapter.

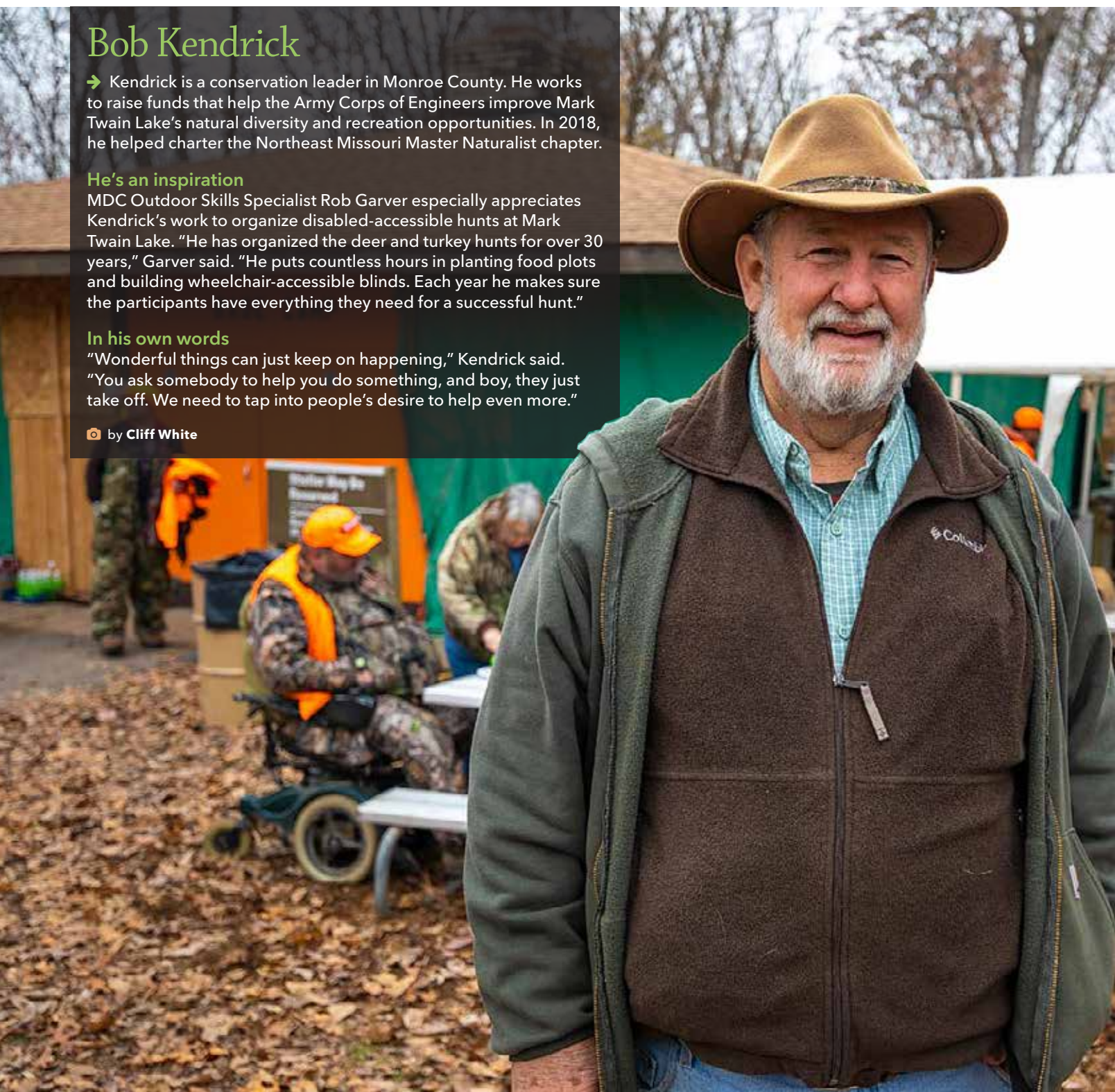
He's an inspiration

MDC Outdoor Skills Specialist Rob Garver especially appreciates Kendrick's work to organize disabled-accessible hunts at Mark Twain Lake. "He has organized the deer and turkey hunts for over 30 years," Garver said. "He puts countless hours in planting food plots and building wheelchair-accessible blinds. Each year he makes sure the participants have everything they need for a successful hunt."

In his own words

"Wonderful things can just keep on happening," Kendrick said. "You ask somebody to help you do something, and boy, they just take off. We need to tap into people's desire to help even more."

by **Cliff White**



What's **your** conservation superpower?



GIVE A GIFT TO NATURE

MDC Forestry staff reminds you not to throw that cut Christmas tree into the trash after the holidays.

Recycle it!

Many communities have a Christmas tree recycling program. If not, there are several creative ways to make good use of your tree.

Place the tree in your backyard to offer cover for wildlife or under a bird feeder to provide nesting locations for your feathered visitors. Add some post-holiday treats as ornaments by coating pinecones with peanut butter and adding bird seed.

Have your tree shredded or chipped for mulch, or place cut branches over dormant plants to provide a bit of insulation during the winter and to add organic matter as the needles fall.

You can also sink the tree in a pond to give fish a place to rest, nest, and escape predators. Multiple live trees make the best cover so work with friends, family, and neighbors to combine efforts. Anchor the trees with concrete blocks and sink them at a depth of about 8 feet with the trees placed in a row.

If you used a balled live evergreen and your ground is still soft enough to dig, add it to your home landscape for years of enjoyment and wildlife cover.

WHAT IS IT? COMMA BUTTERFLY

The comma butterfly, *Polygonia comma*, comes in two forms — summer and fall. The fall version is vibrant orange with black spots. Adults hibernate and appear on warm sunny days, even if there is snow on the ground. The butterfly's namesake commalike marking, which is usually silver or white, is found on the hindwing's underside. Comma butterflies frequent woodlands and brushy roadsides.



RECYCLED CHRISTMAS TREE: CLIFF WHITE; COMMA BUTTERFLY: JIM RATHERT

APPLY FOR SPRING MANAGED TURKEY HUNTS STARTING FEB. 1

Missouri youth, archery, and firearms turkey hunters can apply online for 2019 spring turkey managed hunts Feb. 1–28 at mdc.mo.gov/springturkeyhunts. Hunt details and application procedures are outlined on the site. Drawing results will be posted starting March 15.

Spring turkey hunting youth weekend is April 6 and 7 with the regular spring season running April 15 through May 5.

Detailed information on spring turkey hunting will be available in MDC's *2019 Spring Turkey Hunting Regulations and Information* booklet, available where permits are sold beginning in February. To learn more about turkey hunting in Missouri, visit short.mdc.mo.gov/Z3h.



WINTER TROUT HARVEST BEGINS FEB. 1

Last November, MDC Fisheries staff stocked more than 70,000 rainbow trout in urban-area lakes around the state for winter trout fishing. Many of these areas allow anglers to harvest trout as soon as they are stocked, while other areas are catch-and-release until Feb. 1. Find locations at short.mdc.mo.gov/Zpm.

Beginning Feb. 1, all urban-area lakes allow the harvest of trout. The daily limit is four trout with no length limit. All Missouri residents older than age 15 and younger than age 65 must have a fishing permit. All nonresidents over age 15 must have a fishing permit. To keep trout, all anglers regardless of age must have a Missouri trout permit. Learn more about trout fishing at short.mdc.mo.gov/Zps.



STILL TIME TO DISCOVER NATURE THROUGH EAGLE DAYS

Missouri's winter eagle watching is spectacular — and there is still plenty of time to discover nature through Eagle Days events around the state and eagle viewing opportunities on your own.

MDC Eagle Days events include live captive-eagle programs, exhibits, activities, videos, and guides with spotting scopes. Watch for eagles perched in large trees along the water's edge. To catch eagles in flight or fishing, view them early in the morning. Be sure to dress for winter weather and don't forget cameras and binoculars. Events include:

- **Kansas City:** Jan. 5 from 9 a.m. to 3:30 p.m. and Jan. 6 from 10:30 a.m. to 3:30 p.m. at Smithville Lake Paradise Pointe Golf Course Clubhouse, north of Kansas City. Call 816-532-0174 for more information.
- **St. Louis:** Jan. 19 and 20 from 9 a.m. to 3 p.m. at the Old Chain of Rocks Bridge, south of I-270 off Riverview Drive in St. Louis. Call 314-301-1500 for more information.
- **Springfield:** Jan. 19 from 9 a.m. to 4 p.m. and Jan. 20 from 12:30 to 4:30 p.m. at Springfield Conservation Nature Center. Call 417-888-4237 for more information.
- **Jefferson City:** Jan. 26 from 10 a.m. to 3 p.m. at Runge Conservation Nature Center. Call 573-526-5544 for more information.
- **Clarksville:** Jan. 26 from 9 a.m. to 4 p.m. and Jan. 27 from 10 a.m. to 3 p.m. at Lock and Dam 24 and Apple Shed Theater. Call 660-785-2424 for more information.
- **Schell City:** Feb. 2 from 9 a.m. to 3 p.m. at Mingo National Wildlife Refuge. Call 573-222-3589 for more information.

Can't make a scheduled Eagle Days event? Other hot spots for winter eagle viewing on your own include:

- **Bagnell Dam Access** at Lake of the Ozarks
- **Eagle Bluffs Conservation Area** on Route K, southwest of Columbia
- **Lock & Dam 20**, Canton
- **Lock & Dam 24** at Clarksville
- **Lock & Dam 25**, east of Winfield
- **Mingo National Wildlife Refuge**, northwest of Puxico
- **Moses Eagle Park**, Stella
- **Old Chain of Rocks Bridge**, south of I-270, off of Riverview Drive, St. Louis
- **Riverlands Environmental Demonstration Area**, east of West Alton
- **Schell-Osage Conservation Area**, north of El Dorado Springs
- **Smithville Lake**, north of Kansas City
- **Loess Bluffs National Wildlife Refuge**, south of Mound City
- **Swan Lake National Wildlife Refuge**, south of Sumner
- **Table Rock Lake and Shepherd of the Hills Fish Hatchery**, southwest of Branson
- **Truman Reservoir**, west of Warsaw

For more information, visit mdc.mo.gov/EagleDays.

ANNUAL REVIEW

Fiscal Year July 1, 2017–June 30, 2018

SERVING NATURE AND YOU



Glade Top Trail Natural Area

PHOTOGRAPH BY
NOPPADOL PAOTHONG

Maintaining the public's trust is central to everything we do at the Missouri Department of Conservation. Our very existence as an agency is steeped in citizen support and action. This Annual Review is one way we can report back to you, our shareholders in Missouri's fish, forest, and wildlife resources, to let you know what we've been focused on and how we're spending your public dollars to further the conservation mission.

You'll see there are no shortages of conservation challenges we're facing head on, side by side with our partners — from slowing the spread of the deadly chronic wasting disease in deer to battling for the survival of the iconic monarch butterfly. You'll note how we're using the advancements in technology to expedite progress, such as connecting Missourians with nature to tracking wildlife as part of

significant research efforts. You'll learn how our elk herd is growing, hellbender restoration efforts are tracking, and feral hog eradication efforts are progressing. And you'll also discover the many ways we accomplish conservation creatively and collaboratively with our partners.

We have many accomplishments to share with you from this last year as your Conservation Department. Our hope is that it reminds you of the important work going on throughout the year and reassures you we are prepared for what lies ahead, including continuing to do our very best to accomplish the conservation of Missouri's fish, forest, and wildlife resources. Thank you for being a valuable part of that shared conservation mission — now and into the future!

SARA PARKER PAULEY, DIRECTOR

OPERATING BUDGET



Missouri State Operating Budget

MDC represents **less than 1 percent** of the total state budget and **receives no state general revenue**.

Total Missouri Operating Budget
for Fiscal Year 2018

\$27,710,286,639

46.8%



26.1%



Education

15.0%



Government Services

8.2%



Transportation

3.3%



Natural & Economic Resources

0.6%



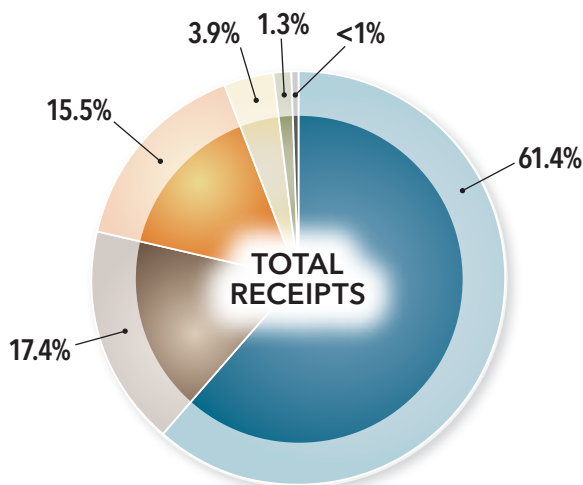
Conservation



MDC Receipts

MDC gets the majority of its funding through the **conservation sales tax**. For every \$8 spent on taxable items, one penny goes to conservation.

Conservation Sales Tax	\$119,568,141
Permit Sales	\$33,931,076
Federal Reimbursements	\$30,106,458
Sales and Rentals	\$7,686,747
Other Sources	\$2,540,170
Interest	\$874,640



MDC Disbursements

Funds are distributed throughout the divisions to accomplish the **top conservation priorities** across the state for MDC.

Wildlife	\$25,882,766
Forestry	\$19,886,912
Protection	\$17,387,038
Outreach and Education	\$17,317,029
Capital Improvements	\$16,462,095
Fisheries	\$15,271,169
Information Technology	\$14,719,038
Resource Science	\$14,352,211
Design and Development	\$12,900,639
Administrative Services	\$10,651,667
Private Land Services	\$10,153,663
Administration	\$3,014,116
Human Resources	\$2,629,631
Regional Public Contact Offices	\$2,277,140
County Assistance Payments	\$1,116,923

NOTE: Disbursements include all operating, other agency, and capital improvements from the Conservation Commission Fund. Other agency disbursements are appropriated outside the Department of Conservation operating budget. Fuel, benefits, and other disbursements were allocated to the appropriate divisions. There were no CART payments made in FY18 due to lack of appropriation authority.

SUSTAINING AND IMPROVING **FISH, FOREST, AND WILDLIFE RESOURCES**

A photograph of a bald eagle perched on a tree branch, surrounded by dense green foliage. The eagle is facing forward, looking slightly to the right. Its white head and neck are prominent against the dark brown feathers of its body. The background is a lush green forest.

Bald Eagle Survey

The recovery of the bald eagle is a conservation success story. After nearly disappearing from most of the United States, the bald eagle is now flourishing across the nation and was removed from the Endangered Species list in 2007. There are more than 400 active eagle nests in the state. The eagle is still federally protected and remains a Species of Conservation Concern in Missouri. MDC monitors the nesting population annually. In addition, through the Eagle Watch Program, volunteer citizen scientists assist with the conservation of bald eagles in the state by collecting population and reproduction data.

MDC Earns Forestry Certification

Over 650,000 acres of Missouri's conservation areas have been certified by one of the world's most recognized forest management standards, the Sustainable Forestry Initiative (SFI).

SFI certification is based on principles and performance measures developed by professional foresters and conservationists. The goal is to balance environmental, economic, and social objectives such as conservation of wildlife habitat and biodiversity, harvesting forest products, protecting water quality, providing forest industry jobs, and developing recreational opportunities.

Successfully achieving SFI certification makes MDC a sustainability leader. Working together, SFI and MDC can broaden the practice of responsible forestry and expand the connection between forests and communities. Certification helps make the link between well-managed forests and the public benefits that affect all of us every day.

As part of its certification, MDC will be required to undergo annual surveillance audits as well as full certification to the SFI Forest Management Standard every five years. The audits are conducted by an independent, accredited third-party certification body.



Projects Track Deer Movement, Survival

MDC is continuing two studies using satellite technology to track white-tailed deer movement in southeast, northwest, and Ozark regions of Missouri.

In the southeast Missouri counties of Bollinger, Cape Girardeau, Stoddard, and Wayne, MDC is using GPS collars to track deer movement in agricultural areas. The project is aimed at developing strategies to manage deer populations on private land.

Meanwhile, in the glaciated plains of north Missouri and in the Ozark mountains of south Missouri, the department is working with the University of Missouri to determine survival and reproductive rates, as well as movement behaviors of deer in these contrasting landscapes.

Black Bear Study Continues

Once nearly nonexistent in Missouri, the black bear has made a comeback over the past several decades, and MDC is making a concerted, long-term commitment to tracking and understanding the size and health of the state's black bear population.

In an effort to keep the public informed about the ongoing black bear research project and bear population, MDC launched two new websites.

One website is dedicated to the black bear research project. Research updates, photos, and links can be found at short.mdc.mo.gov/ZTb. The second website is a Black Bear Story Map, which uses interactive maps, photos, and videos to illustrate interesting aspects about Missouri's growing black bear population. The black bear story map can be accessed through the research website listed above.



Elk Herd Growth Continues

Missouri's elk herd, which is the result of an MDC reintroduction effort, continues its steady growth, according to research conducted by MDC and the universities of Missouri and Montana.

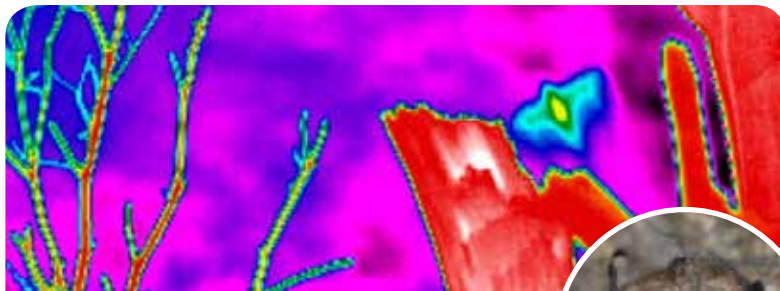
Researchers captured 70 elk, including 12 bulls and 58 cows on private, department, National Park Service, and Nature Conservancy lands in Carter, Shannon, and Reynolds counties as part of an ongoing monitoring program to determine the herd's overall health, growth, and mobility. The study found 78 percent of the adult cows and 36 percent of the yearling cows to be pregnant. Pregnancy rates were slightly lower this year than the prior two years. At least 53 calves were born in 2017, and calf survival was around 72 percent from the collared calves. Survival for adult and yearling elk of both sexes falls between 85 and 96 percent. The department is working on regulations for the inaugural elk hunt in Missouri.

The department estimates Missouri's elk population to be around 170.

Economy Affected by Elk Tourism

Areas near Missouri's elk restoration zone in the state's south-central region have seen an economic boost of nearly \$1.3 million, according to a study conducted by the department.

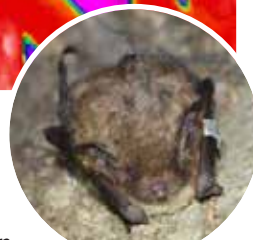
Based on 22,000 visitor surveys taken in 2016, researchers determined that 89 percent of the visitors to Peck Ranch Conservation Area and 27 percent of visitors to Current River Conservation Area were there specifically to view elk.



Thermal Imaging: A New Research Tool

Staff is exploring the use of thermal imaging in wildlife research. Resource Scientist Darren Thornhill used a thermal imaging camera to locate bats, including the federally endangered Indiana bat, as they roosted under the bark of trees during the summer, a feat never attempted before. The camera was able to detect the heat signature of the bats, which emanated through the tree bark, allowing biologists to study and protect this species' important roosting habitat. The camera also has been useful for assessing the efficiency of netting techniques, counting bats as they exit caves, and locating bats roosting in structures like buildings and bridges.

In addition to bat research, Thornhill has been exploring other possible uses for thermal photography in wildlife research. He has used the camera for locating white-tailed fawns, grassland bird nests, black bear dens, and nesting wild turkey hens. The camera has been especially useful for differentiating sex of white-tailed deer prior to rocket net capture, when bucks have already dropped their antlers and researchers are targeting does for capture. The camera is also being evaluated as a tool for conducting white-tailed deer population estimates.



Indiana bat





Feral Hogs

MDC and its partners developed a proactive approach for complete elimination of feral hogs from the state. MDC committed \$1.865 million dollars annually, with commission approval beginning in FY18, to fully fund the plan. This dedicated funding has increased the number of hog trappers on the landscape and allows staff and partners to purchase more supplies for trapping. MDC is already seeing success from implementing this plan and the continued strength of the partnerships that have developed as we battle this destructive, invasive species.

MDC and its partners continue to focus efforts on trapping entire sounders, or groups of hogs, at one time. The results of the trapping have been promising, as the recorded numbers of hogs trapped and killed has increased significantly over previous years. In addition, there has been a noticeable decrease in population size in some areas. MDC is also focused on outreach to continue to inform the public about feral hogs, the efforts to eliminate them, and willingness to assist landowners in removing hogs from their property. MDC has partnered with hundreds of landowners to help them eliminate feral hogs from their land. It is going to take cooperation from everyone to be successful in eliminating feral hogs from the state.

Identifying, Slowing the Spread of CWD

As part of continued efforts to track and slow the spread of chronic wasting disease (CWD), an infectious, fatal, degenerative neurological disease that threatens Missouri's white-tailed deer herd, MDC tested over 24,600 deer during the 2017–2018 season. This included nearly 15,000 samples collected opening weekend of firearms deer season within the 25 counties in the CWD Management Zone as part of the year's mandatory sampling efforts. An additional 7,500 hunter-harvested deer were sampled by cooperating taxidermists throughout the state and MDC staff in key locations outside of opening weekend. Over 550 sick and roadkilled deer were also tested. Sixteen CWD-positive hunter-harvested deer and one CWD-positive roadkilled deer were detected through these surveillance efforts.

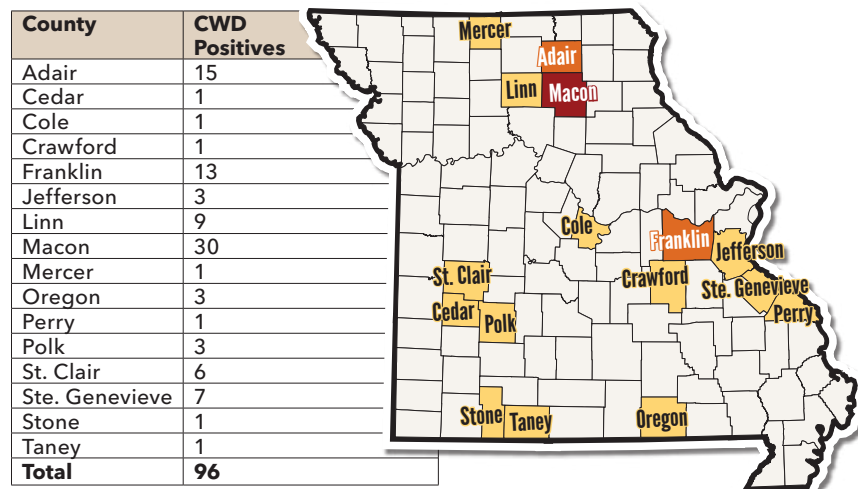
MDC worked with cooperating landowners within 1–2 miles of previous CWD detections after the close of regular hunting seasons to remove an additional 1,485 deer. These post-season targeted culling efforts, implemented between Jan. 16 and March 15, successfully removed an additional 16 CWD-positive animals from the state's deer herd.

Increasing the number of CWD-infected deer removed from the population through targeted culling efforts may help to slow or stabilize CWD prevalence growth and help minimize the level of CWD contamination in the environment.



Encouragingly, for the third year in a row, no CWD-positive deer were detected in central Missouri, where a single CWD-positive deer was confirmed in March 2015. In areas in Missouri where CWD was confirmed during 2017–2018, surveillance suggests the disease remains relatively localized and overall rare in the state. As of Dec. 12, 2018*, a total of 96 CWD positive deer have been collected in the state.

Confirmed CWD Positives Since 2011



*For daily updates, visit short.mdc.mo.gov/ZcP.



Audubon Conservation Ranching

MDC is assisting the National Audubon Society in implementing a beef program to benefit both ranchers and grassland birds. The Audubon Conservation Ranching program links consumers to beef produced on farms that provide good grassland bird habitat. When consumers buy beef certified under the Audubon program, they're boosting habitat for grassland birds and supporting more pollinators for plants.

Grassland birds, such as bobwhite quail, have been in steep population declines during the past half century, and this program's goal is to help reverse those trends while maintaining profits for cattle ranchers. The program is a partnership between farmers, consumers, and retail outlets, with assistance from conservation experts, to mesh bird-friendly habitat with market-based agriculture.

The program aims to give ranchers a premium price for beef, and it also links them with financial incentives, such as cost-share programs, that defray costs for implementing conservation practices.



Northern bobwhite

MDC Learning About Longnose Darters

One of Missouri's rarest fish, the longnose darter once occurred in the White River near Branson but disappeared when Table Rock Lake was created. Now, with the only remaining Missouri population located in the St. Francis River above Lake Wappapello, it is petitioned for listing under the Endangered Species Act. The biggest threats to its existence are habitat fragmentation caused by dams and poor water quality. Prior to 2017, biologists observed fewer than 100 longnose darters in Missouri. MDC researchers recently doubled that number and are investigating the use of environmental DNA to better understand where longnose darters occur. MDC has also initiated research to learn about the life history and habitat use of this small, 3-inch fish in an effort to manage and protect it.



Longnose darter

Missourians for Monarchs Collaborative

The department joined over 30 other agencies and organizations to finalize a collaborative monarch and pollinator conservation plan for Missouri. Missourians for Monarchs has representatives from agribusiness, conservation organizations, academia, state and federal agencies, volunteer organizations, and agriculture organizations. To date, 40 organizations in Missouri have signed onto the plan. It is being used as a national model for other states because of the diversity within the collaborative. The collaborative is finalizing its first monarch habitat accomplishment reporting for 2014 through 2017. The objective is to create, conserve, and manage 385,000 acres (19,000 acres per year) of additional habitat with 200 milkweed stems per acre by 2038.

Partners have risen to the challenge and report over 220,000 acres statewide of new habitat and/or land newly managed to favor monarchs.

Newly managed land for monarchs may include changes in mowing timing or the addition of prescribed burning or other practices intended to improve habitat for monarch butterflies and other species. Since milkweed populations in new plantings or newly managed areas won't develop for another three to four years, more research and monitoring of milkweed densities will be needed to determine progress toward the state goal of 77 million additional milkweed stems. Continued management, such as prescribed burning and invasive species control, must take place on a regular basis to maintain and encourage necessary expansion of the milkweed populations on reported acres. The group has trained 22 volunteers to begin monitoring milkweed populations on the newly created habitat.



Eastern hellbenders

Captive-Raised Hellbenders Released to Ozark Rivers

During the summer of 2017, MDC and the St. Louis Zoo released 1,586 zoo-raised Ozark and eastern hellbenders into their native Ozark rivers. In addition, another 129 eastern hellbenders reared at MDC Shepherd of the Hills Hatchery were released.

Researchers will monitor these hellbenders, raised from eggs collected in the wild or as a result of the captive breeding program at the zoo, to determine the success of augmenting captive-reared hellbenders in the wild.

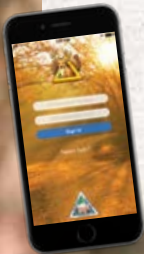
CONNECTING CITIZENS

TO FISH, FOREST, AND WILDLIFE RESOURCES

MO Hunting App

More than 107,000 hunters used the MO Hunting app to telecheck their harvested deer and turkey during FY18, and the app was downloaded over 105,000 times. In response to user requests, MDC staff implemented a new feature, allowing families and hunting parties to store up to 10 users in the app and toggle between them to easily access permits. Another enhancement allows users to sort seasons by those that are currently open and to add a closed indicator next to appropriate seasons.

MO Hunting makes it easy to buy permits, electronically notch them, and telecheck your harvest. The app is available on Android and iPhone platforms at **short.mdc.mo.gov/Zi2**.



Tree City USA Reaches 100 Missouri Cities

For over 40 years, people who live in Tree City USA communities have enjoyed the benefits of having greener, healthier places to live. This year, for the first time ever, there are over 100 Missouri communities participating in Tree City USA, representing 44 percent of the state's population.

Tree City USA is a national recognition program sponsored by the Arbor Day Foundation and administered by MDC. It provides a framework to help communities establish a healthy, sustainable urban forestry program.

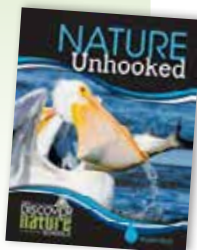
According to the Arbor Day Foundation, trees yield three to five times their cost in overall benefits to the cities that manage them. Trees can lower costs for stormwater management and help reduce energy consumption. Research also has shown the positive impact trees have on people, from improving their health to boosting their property values.

The Tree City USA program is flexible enough that communities of any size can participate. Kansas City is the biggest Missouri community in the Tree City USA program, with a population of 441,000 people. Glen Echo Park is the smallest, with 159 people. In 2017, Missouri Tree City USA communities invested over \$24 million in tree and forest management, including tree inventories, pruning, planting, hazard assessments, education, and planning.

Discover Nature Schools

The Discover Nature Schools Program piloted a new middle school education unit, *Nature Unhooked*. To better meet teachers' needs, it includes several curricular enhancements, such as cross-curricular connections, alignments to the new Missouri Learning Standards, assessment strategies, and project-based learning. The unit includes a take home feature to promote citizen science and connect students to nature.

MDC launched a teacher portal, allowing access to each of the education units, information on professional development and grants, opportunities to share with other teachers, and online ordering of education materials. In its first year, more than 2,700 teachers created user accounts.



Record Year for Fishing

Missouri is a great place to fish for more than 1 million anglers, including nine who caught record-breaking fish in FY18. Four of the records were caught by pole and line, while five were taken by an alternative method.

- ★ **Bowen Dockery, Greentop**, caught a 1-pound, 3-ounce green sunfish measuring 10.6 inches by trotline at a private pond in Schuyler County.
- ★ **Jeffrey Rowland, Poplar Bluff**, caught a 2-pound, 8-ounce northern hog sucker measuring 18.3 inches by gig from the Current River in Ripley County.
- ★ **Craig Barulich, Kansas City**, hooked a 3-pound, 19¾-inch skipjack herring from the Missouri River in Osage County using pole and line.
- ★ **Richard Bradshaw, Winona**, took a 2-pound, 12-ounce northern hog sucker measuring 18.6 inches by gig from the Current River in Carter County.
- ★ **Bryant Rackers, Bonnots Mill**, snagged a 9-pound, 1-ounce blue sucker measuring 30 inches from the Osage River in Cole County.
- ★ **Maverick Yoakum, Dixon**, caught a 10-pound, 3-ounce river redhorse measuring 28 inches from Tavern Creek in Miller County with pole and line. His catch also broke the pole and line world record.
- ★ **Michael Williams, Wappapello**, shot a 2-pound, 4-ounce yellow bullhead, 14¾ inches long, with a bow and arrow from Duck Creek Pool #1 in Bollinger County.
- ★ **Kerry Glenn, Sedalia**, hooked a 2-pound, 2-ounce goldeye from Truman Reservoir in Benton County using pole and line.
- ★ **Rick Sartin, Birch Tree**, caught a 10-pound, 6-ounce silver redhorse measuring 28½ inches by pole and line from the Current River in Carter County.





**Alley Nordell,
MoNASP National
Champion**

MoNASP

In FY18, the Missouri National Archery in the Schools Program (MoNASP) continued to grow, with 690 schools and over 200,000 students participating as part of their school curriculum. A record-setting 3,132 students competed in the state tournament in Branson, Missouri.

- ★ **Alley Nordell** — National Champion
- ★ **Trenton Meyer** — 2nd National Male Archer
- ★ **Donald Holupka** — 3rd National Male Archer
- ★ **Kamryn Twehus** — World Champion Female Archer
- ★ **Donald Holupka** — World Champion Male Archer

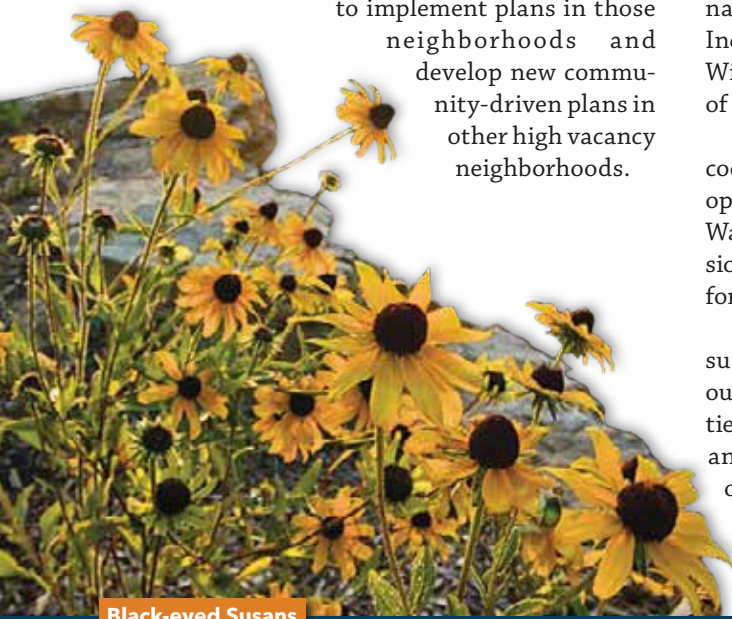
Missouri was also recognized for the work the MoNASP archers have done off the range. Missouri has the third highest enrollment rate in the Academic Archer Program, with 1,654 Missouri archers receiving this honor.

Urban/Community Initiatives

St. Louis Green City Coalition Project

The Green City Coalition (GCC) brings diverse partners together in St. Louis to address social, economic, and environmental problems surrounding vacant properties. GCC is a partnership between the City of St. Louis, MDC, Metropolitan St. Louis Sewer District, and St. Louis Development Corporation, working collaboratively with a growing network of member organizations and residents, to convert vacant land to new community green spaces. Over 200 vacant publicly owned parcels, totaling 23 acres, have been reimaged by Wells Goodfellow and Walnut Park East neighborhood residents and students through participatory mapping and design workshops and a host of other community events. Work continues in FY19

to implement plans in those neighborhoods and develop new community-driven plans in other high vacancy neighborhoods.



Black-eyed Susans

Kansas City Native Plant Initiative

The diverse partnerships and disciplines participating in the recently organized Kansas City Native Plant Initiative (KCNPI) include a network of more than 60 private, public, and nonprofit organizations from the Kansas City Metropolitan area. KCNPI participants have a shared vision — a future of beautiful, native landscapes connecting heartland communities where nature and people thrive together.

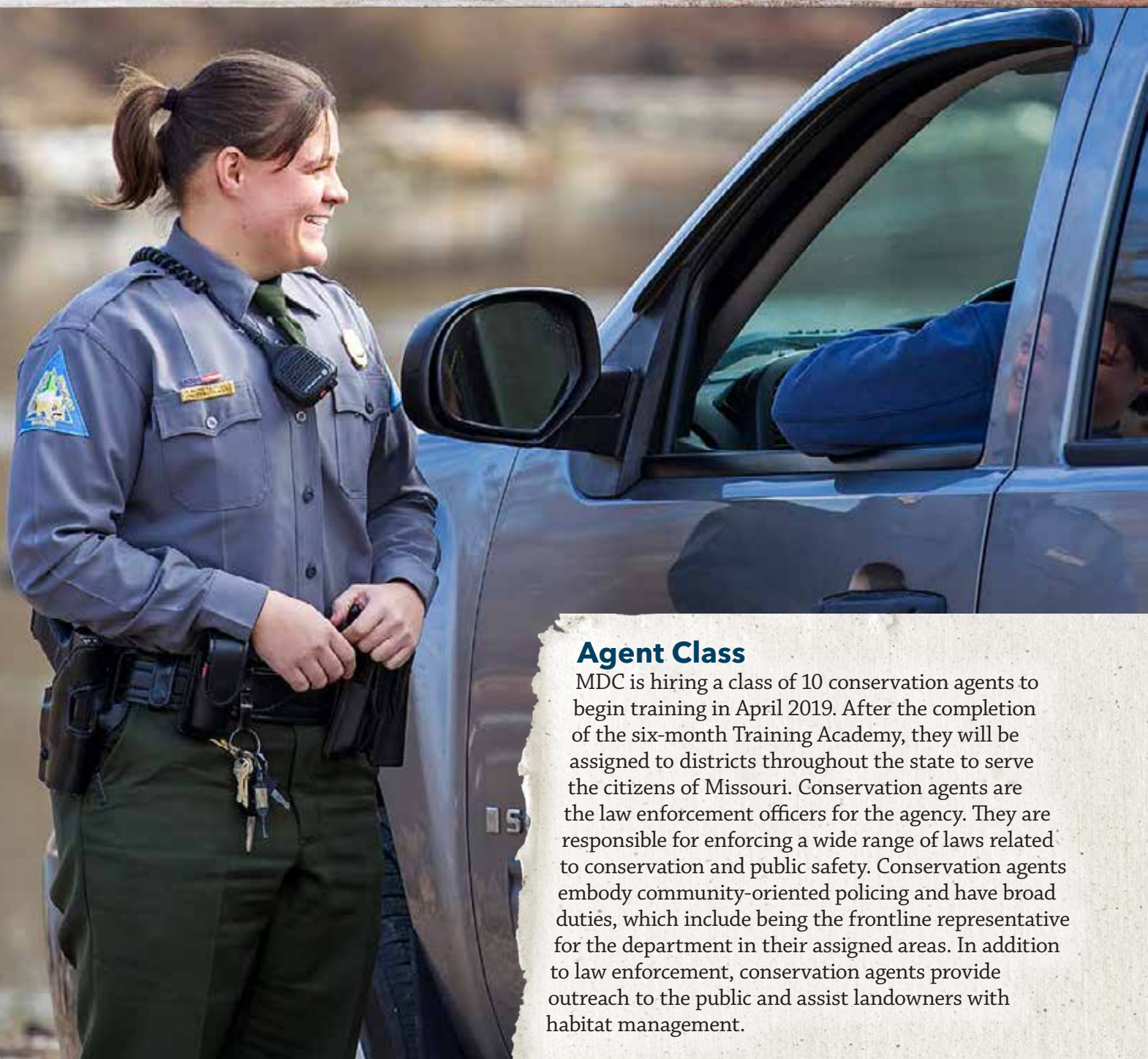
They have been active in bringing together professionals and residents for workshops on various native landscaping topics. The spring series of workshops consisted of Natives for Novices, Native Plant Rain Gardens, and Design and Management of Native Landscapes. Turnout for this series was tremendous — Native for Novices had over 300 attendees alone. KCNPI has received a generous donation from the Arvin Gottlieb Foundation to support the 2019 spring workshop series.

KCNPI will be hosting a first-of-its-kind Midwest regional conference on native landscaping in the fall of 2019. This conference will bring together native landscape professionals from as far away as Minnesota, Texas, Indiana, and Colorado to share successes, new ideas, and research. The William T. Kemper Foundation has given a generous donation in support of the conference.

They have been contracted by Kansas City Parks and Recreation to coordinate a series of workshops on improving the sustainability of park operations. The workshops were Annuals to Perennials, Turf Reduction, Water Conservation, and Chemical Use. KCNPI brought together professionals in all of these categories to put together a sustainability playbook for KC Parks and Recreation.

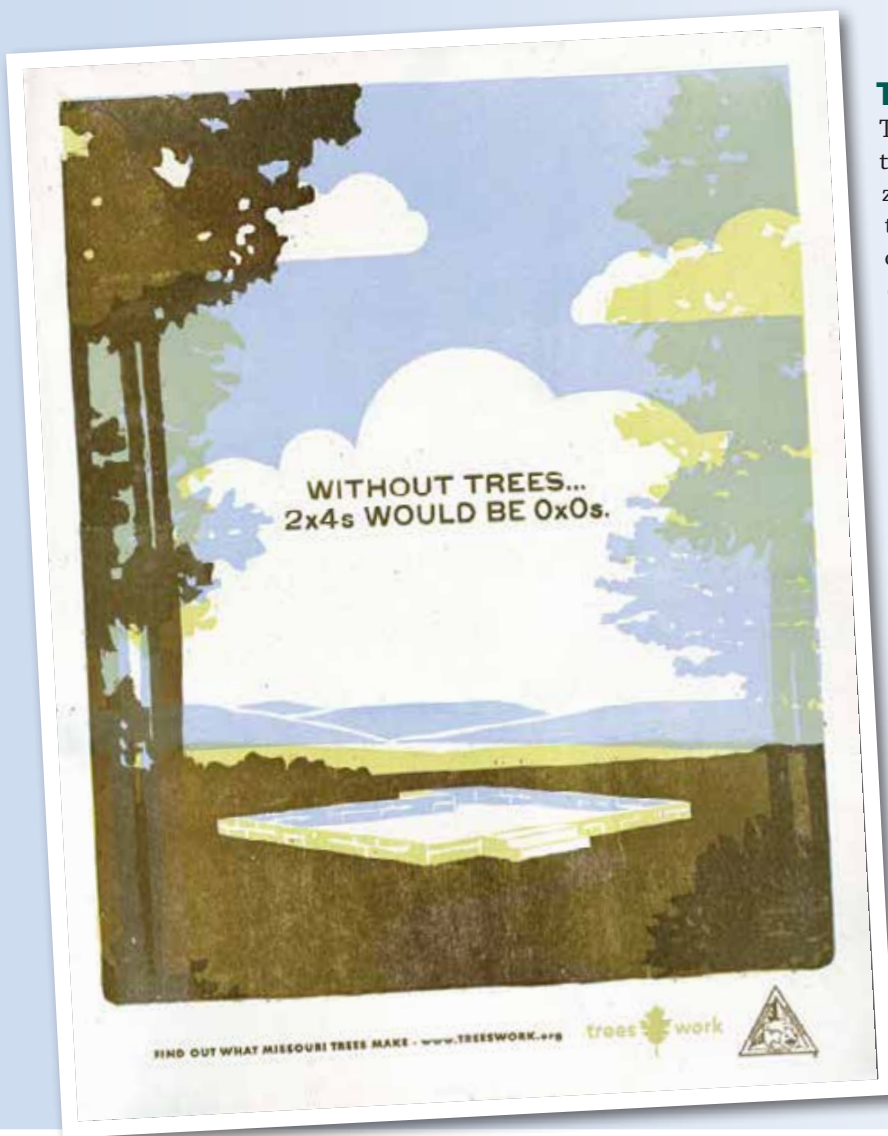
KCNPI and its partners are expanding their efforts to engage the surrounding communities in the Anita B. Gorman Discovery Center's outdoor spaces and increase attendance to the many programs and activities currently being presented. They will coordinate with KCNPI partners and others (including KC Neighborhood Alliance, city leadership, and others) about customizing engagement opportunities and outreach targets and involve local elected officials, including the mayor and city council members as well as city staff.

ENHANCING OPERATIONAL EXCELLENCE AND **SUPERIOR CUSTOMER SERVICE**



Agent Class

MDC is hiring a class of 10 conservation agents to begin training in April 2019. After the completion of the six-month Training Academy, they will be assigned to districts throughout the state to serve the citizens of Missouri. Conservation agents are the law enforcement officers for the agency. They are responsible for enforcing a wide range of laws related to conservation and public safety. Conservation agents embody community-oriented policing and have broad duties, which include being the frontline representative for the department in their assigned areas. In addition to law enforcement, conservation agents provide outreach to the public and assist landowners with habitat management.



Trees Work

Trees Work is an outreach campaign to communicate the benefits of Missouri's trees and forests to its citizens. MDC wants people to understand and appreciate the many values of trees and forests whether they live on a farm or in the city, work outdoors or behind a desk, or relax by walking down a forest trail or along a tree-lined street.

In 2018, MDC conducted an evaluation of the campaign as it moved to a statewide effort. The evaluation collected public input through social media posts, online ads, and emails, all linked to an online survey. Over 18,000 people responded to the survey.

Do people recognize Trees Work as a brand? Not yet. Only 20 percent of respondents said they recognized it as compared to 96 percent recognition of Smokey Bear and 94 percent recognition of Click It or Ticket.

However, 88 percent strongly agreed that "trees in my neighborhood benefit me," and 90 percent strongly agreed that "Missouri woods and forests benefit me."

In addition, 60 percent of respondents were very interested in learning more about the health and environmental benefits of trees. The results are being used to help direct Trees Work, particularly in developing a call to action that may be added to the current educational campaign as it moves forward.

New Research Site Debuted

Since its inception, MDC has committed itself to using information backed by sound scientific research to direct management and regulatory decisions. This strong scientific research component is one of the factors contributing to the department's reputation as one of the finest fish, forest, and wildlife agencies in the country. To promote and highlight its many research projects, MDC launched **research.mdc.mo.gov**. The site provides fellow researchers, students, and interested members of the public access to findings and data from numerous research projects. The site also provides a glimpse of the many techniques and technologies biologists use to conduct their research and monitoring studies. MDC hopes this web portal will encourage the flow of information amongst interested parties and promote the interesting and, in many cases, cutting-edge scientific work being conducted.



Facebook Live

Last year, the MDC communications team used Facebook Live over 50 times and on average reached over 30,000 people each time. MDC uses Facebook Live to show the public how we are sustaining and improving their fish, forest, and wildlife. Facebook Live provides subscribers the opportunity to learn directly from the experts — resource scientists, foresters, wildlife biologists, and more. Some of the more popular Facebook Live topics in FY18 included:

- ★ **Missouri's trout opener at Montauk,** reached over 79,000 people
- ★ **Riding along with MDC agents and highway patrol on the Niangua,** reached over 74,000 people
- ★ **Opening morning of firearms deer season,** reached over 54,000 people
- ★ **Field to Fork with James Worley,** reached over 51,000 people



Katy Trail State Park at Hart Creek Conservation Area

Public Participation

Area Plans

Every property MDC oversees is operated under a written management plan, and MDC seeks public comment on each of these plans as they are updated. In FY18, staff posted 51 area plans online, seeking public comment.

Hart Creek Public Meeting

MDC hosted an informational meeting Nov. 1, 2017, with neighbors and citizens interested in forest management practices at Hart Creek Conservation Area (CA). Staff addressed topics and concerns brought up during the comment period for the draft Hart Creek CA management plan, including area plan development and the department's approach to forest management. As a result of the meeting, MDC built a working relationship with the area's neighbors.

Public Engagement

CWD Landowner Meetings

MDC staff from the divisions of Resource Science, Wildlife, Protection, and Policy Coordination met with landowners to talk about CWD and targeted culling of deer on their property.

Gigging Survey

Using a brief online questionnaire, MDC gathered public input on gigging Ozark streams. Participants were asked about the season and season length and encouraged to provide additional comments.

Landowner and Sporting Dog Public Meetings

MDC facilitated two meetings — one in Macon and one in Laddonia — between landowners and sport dog groups. Staff wanted to increase communication between impacted landowners and sporting dog enthusiasts in the local areas and promote mutual respect for landowner property rights and the tradition of hunting with hounds. The intent was for open, respectful discussion of the issues and to promote problem solving with appropriate stakeholders in central Missouri. MDC staff presented information and facilitated discussions on regulations, furbearer management, hunting traditions, and land use.

Strategic Plan

MDC announced a new strategic plan, *Missouri Conservation: Design for the Future*. This document describes a 21st century conservation model for success to ensure the department engages the next generation of Missourians in caring for our fish, forests, and wildlife resources. The plan consists of three goals, six outcomes, and 17 strategies that will be measured for success. For more information, visit short.mdc.mo.gov/ZqR.

Missouri Conservation Partners Roundtable

MDC hosted its first Missouri Conservation Partners Roundtable event, a gathering of over 70 conservation partners, to provide feedback on the department's strategic plan. This event will now be held annually.

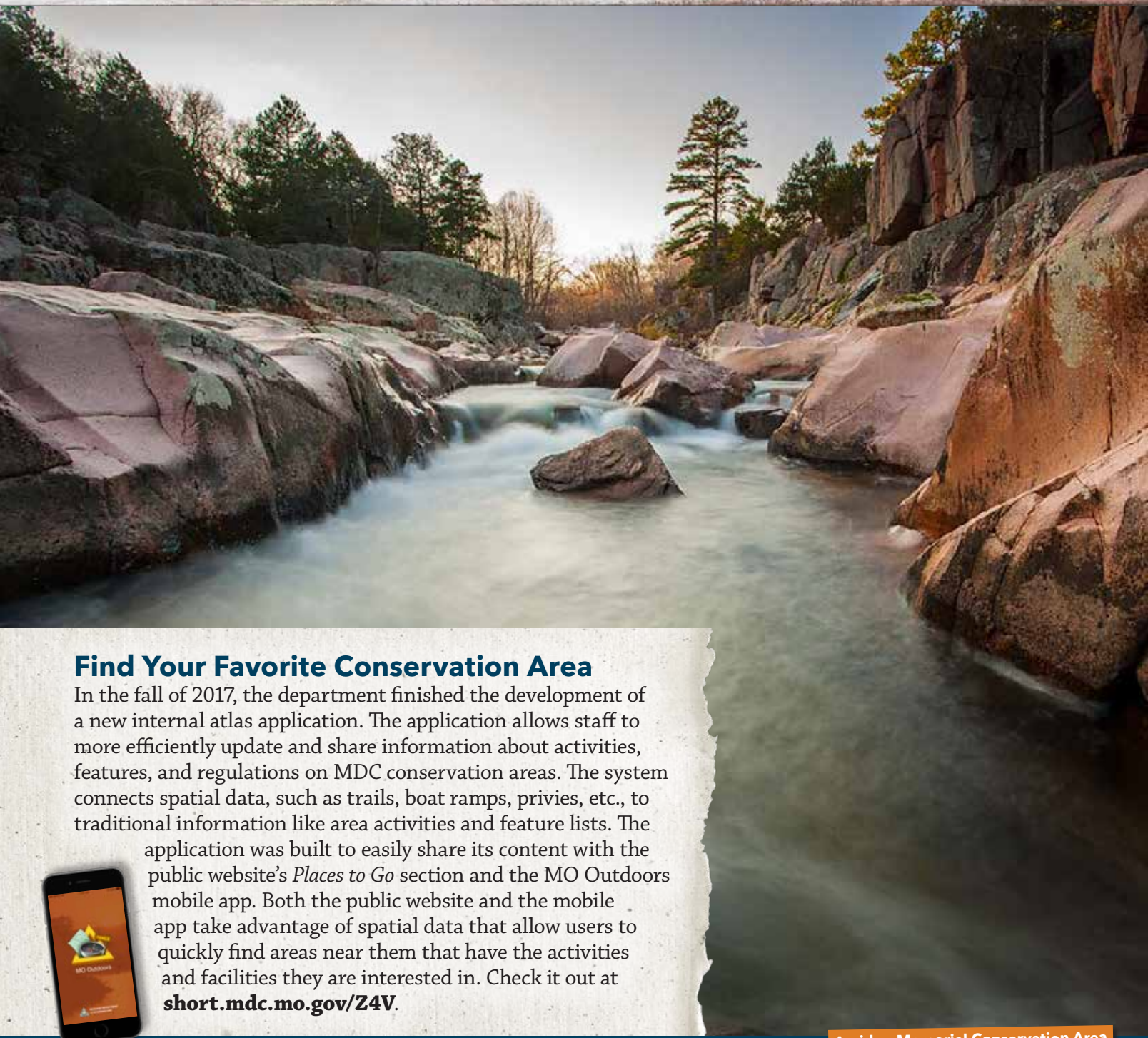
MDC Marks Its 80th Anniversary

To celebrate the department's 80th anniversary, Director Sara Parker Pauley, deputy directors, commissioners, and staff met with Missourians from the entire state. Open houses were held in Cape Girardeau, Jefferson City, Kirksville, St. Louis, St. Joseph, Springfield, Winona, and Kansas City. Local events were held in Kansas City, Columbia, Gainesville, Hannibal, and northwest Livingston County. Comments were also collected at the following fairs: Ozark Empire Fair in Springfield, the Town Country Fair in Washington, the State Fair in Sedalia, and the SEMO Fair in Cape Girardeau.



INCREASING CITIZEN ACCESS

TO FISH, FOREST, AND WILDLIFE RESOURCES



Find Your Favorite Conservation Area

In the fall of 2017, the department finished the development of a new internal atlas application. The application allows staff to more efficiently update and share information about activities, features, and regulations on MDC conservation areas. The system connects spatial data, such as trails, boat ramps, privies, etc., to traditional information like area activities and feature lists. The application was built to easily share its content with the public website's *Places to Go* section and the MO Outdoors mobile app. Both the public website and the mobile app take advantage of spatial data that allow users to quickly find areas near them that have the activities and facilities they are interested in. Check it out at **short.mdc.mo.gov/24V**.



Amidon Memorial Conservation Area

MDC Celebrates 50 Years of Champion Trees

MDC's Champion Tree program is celebrating a half-century of tracking Missouri's biggest known trees. There are more than 130 species on the list, ranging from a scarlet oak stretching 15 stories tall to a winged sumac with a trunk just over three inches in diameter.

To celebrate the anniversary of the Missouri Champion Tree Program, MDC has assembled a list of 38 champion trees located on public land for adventure seekers to visit. That list includes a story map with photos and is available at mdc.mo.gov/championtrees.

MDC first released a list of the biggest known trees throughout the state in 1968. The goal was to find the biggest specimens of Missouri's native trees, share them with the public, and encourage the hunt to continue. Champion trees can be found all over the state — in backyards and on farms, city parks, state parks, and conservation areas.

These big trees represent the great diversity of Missouri's trees. The state's biggest known sassafras resides in a city park in Monett. The current champion flowering dogwood, Missouri's official state tree, is on private property in Mississippi County. Many mid-Missourians are familiar with the centuries-old bur oak in McBaine, which has maintained its champion status for years. Among the many beautiful trees at Big Oak Tree State Park near East Prairie are three champions — the pumpkin ash, persimmon, and sweetgum.



Northern red oak champion tree at Wappapello Lake in Wayne County

Share the Harvest

Thousands of Missouri deer hunters donated more than 289,200 pounds of venison to Share the Harvest last deer season — including nearly 5,600 whole white-tailed deer. Since the program started in 1992, Share the Harvest has provided nearly 4 million pounds of lean, healthy venison to help feed hungry Missourians. Share the Harvest is coordinated by MDC and the Conservation Federation of Missouri. Deer hunters donate their extra venison to participating meat processors throughout the state, who grind the meat into one-pound packages. The packaged venison is then given to food banks and pantries for distribution to Missourians in need of food assistance.



Adult All-Online Hunter Education Course

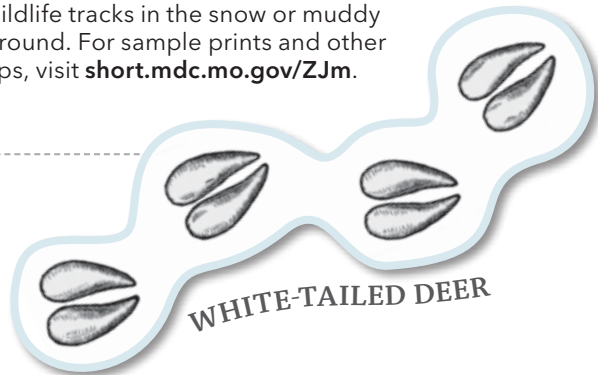
The Missouri Hunter Education Program continues to evolve and find ways to recruit new hunters, reactivate those who haven't hunted in a while, and retain those who hunt today. The way adults learn is ever changing. More individuals utilize mobile applications and online tools to educate themselves. This type of learning, referred to as eLearning, provides individuals the flexibility to learn at their own pace and during periods of time they choose. To meet this growing demand for flexibility, the department implemented the new all-online hunter education course July 1, 2017. Missouri was the 15th state to provide this option. The all-online course will allow Missouri residents 16 years or older to complete an online course to get hunter education certified. The online course includes videos and animation to teach hunter safety, firearm safety, ethics, regulations, and wildlife management.

15,160 citizens completed the all-online hunter education course option during FY18.

Get Outside

in JANUARY →

Ways to connect with nature



White-tailed deer



Cottontail rabbit

Sampling a Sapling

Wildlife enjoy snacking on saplings during the winter. Take a look around and see if you can spot where an animal has been. If you see a ragged cut sapling, a deer has been by for a nibble. A neat 45-degree slice? That's the work of a rabbit.

Wildlife Tracking

If you have cabin fever, get out and take a hike. Make it a challenge, identifying wildlife tracks in the snow or muddy ground. For sample prints and other tips, visit short.mdc.mo.gov/ZJm.

SOUTHEAST REGION

Wolves, Predators of the Past and Present

Thursday, Jan. 31 • 6:30–8 p.m.

Cape Girardeau Conservation Nature Center • 2289 County Park Drive, Cape Girardeau, MO 63701

Registration required. Call 573-290-5218 starting Jan. 2.

Ages 7 and older

Howls in the night, tracks in the mud ... could it be a wolf? Missouri has far more coyotes and foxes, but a few wolves have been confirmed in Missouri. Researchers continue to learn more about how large predators can benefit Missouri and how to avoid conflicts with them. Representatives from the Missouri Department of Conservation and the Endangered Wolf Center will share fascinating information on the latest wolf research and findings.



Red wolf

Natural Events to See This Month

Here's what's going on in the natural world.



Snowy owls may appear in Northern Missouri



Foxes breed through March



Harbinger of spring flowers

ST. LOUIS REGION

An Evening With Raptors

Friday, Jan. 25 • 8–9 p.m.

Powder Valley Conservation Nature Center
11715 Cragwold Rd., Kirkwood, MO 63122

Reservations required. Call 314-301-1500 for more information
All ages

Join us as we welcome back the Missouri falconers and their hunting partners! Falconry, a sport reported as early as 700 B.C.E., is still practiced today. Learn what falconry is and how to become a falconer. The evening will begin in the auditorium with a presentation on raptors and the art of falconry. Following the presentation, you will have an opportunity to meet and greet the birds and their hunting partners and see some of the equipment used in the sport of falconry.



Red-tailed hawk



Spring beauty

Spring Forward

Start planning your spring native-plant landscaping. Broadcast native wildflower seed right before a snowfall. Visit grownative.org for design ideas and plant sources.

Take Cover

Build an out-of-the-way **brush pile**. Not only is it a tidy way to clean up your brush, but wildlife will appreciate the cover during the cold winter weather.

Call Before You Cut

5 REASONS TO CALL BEFORE YOU CUT

- ✓ Learn if harvesting is right for you and your woods
- ✓ Harvest the proper trees to ensure a healthy forest
- ✓ Find a trained logger for the job
- ✓ Maximize timber sale income and save \$\$\$ on taxes
- ✓ Ensure your overall satisfaction with the timber harvest

Request a free informational packet about working with a professional forester to take care of your woods.

**callb4ucut.com
877-564-7483**

Places to Go

OZARK REGION

Indian Trail Conservation Area

History and nature cross paths in Dent County

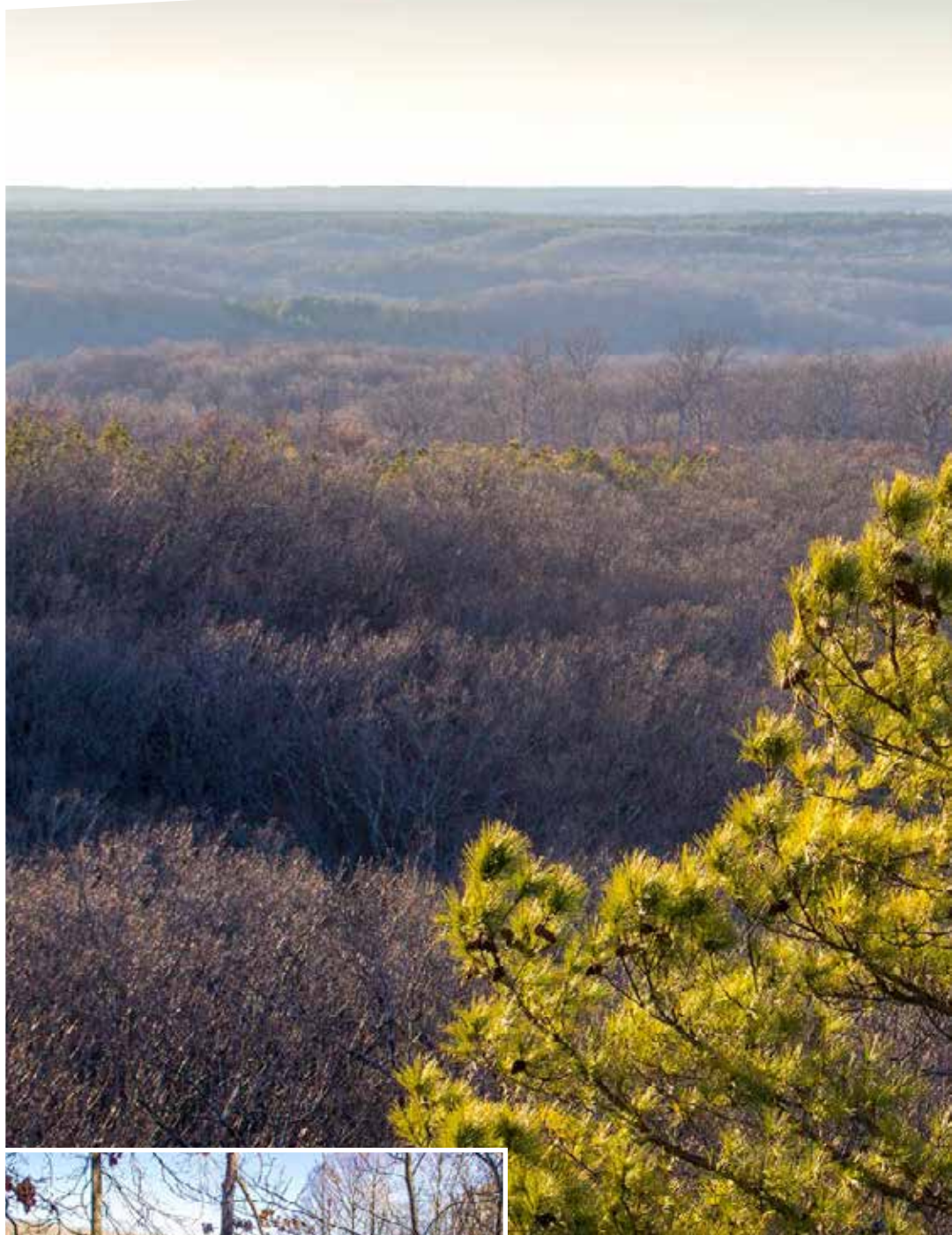
by Larry Archer

✧ From atop the lookout tower near the center of Indian Trail Conservation Area (CA), visitors can see as far north as Rolla and as far south as Salem, but it's from the base of the tower where visitors can see into the area's sad past.

That's where a plaque describes how one portion of the historic Trail of Tears cuts through the 13,005-acre conservation area, located in Dent County between Salem and Steelville. The Trail of Tears is the collective name given to the routes used in the 1830s during the forced relocation of southeastern Native American tribes to present day Oklahoma.

While the Trail of Tears route is not a designated hiking trail, several of the area's gravel roads, identified on area maps, run parallel to the trail, said Indian Trail CA Manager Preston Chapman. In addition to this historic route, Indian Trail CA has other opportunities to take in the area's forests and glades, Chapman said.

"Most of the access trails that are good for hiking are up on ridgetops," he said. "They're flat, they're easy hiking. Yet there are some areas where you can go and find some strenuous hills if you are a more avid hiker or backpacker."



Miles of pine, oak, and hickory forests can be seen from the fire tower at Indian Trail Conservation Area.

Inset: The 38-acre Blackwell Lake, built by the Civilian Conservation Corps in the 1930s to provide water to a nearby hatchery, now provides opportunities for black bass, white bass, and sunfish.

DAVID STONNER



INDIAN TRAIL CONSERVATION AREA

consists of 13,503 acres in northeast Dent County.
From Salem, take Highway 19 northeast 12 miles.

N37° 45' 23.4" | W91° 23' 40.92"

short.mdc.mo.gov/Zcy 573-729-3182

WHAT TO DO WHEN YOU VISIT



Bird-Watching Included in the National Audubon Society's Current/Jack's Fork Watershed Important Bird Area (short.mdc.mo.gov/ZcC) and the Great Missouri Birding Trail (short.mdc.mo.gov/ZGN). The eBird list of birds recorded at Indian Trail CA is available at short.mdc.mo.gov/Zcj.



Camping Primitive camping (no facilities provided) is allowed in designated areas.



Fishing Black bass; sunfish; white bass



Hiking No designated trails, but extensive hiking opportunities along interior roads and service areas.



Hunting Deer and turkey

Deer and turkey regulations are subject to annual changes. Please refer to the *Spring Turkey* or *Fall Deer and Turkey* booklets for current regulations. Also **squirrel**.



Shooting Range Firearms range with 25-, 50-, 100- and 200-yard targets.

WHAT TO LOOK FOR WHEN YOU VISIT



Bobcat



White-tailed deer



Dark-eyed junco



Belted kingfisher



Long-Tailed Weasel

Mustela frenata

Status

Rare,
Species of
Conservation
Concern

Size

MALES
total length: 13½–17½ inches, weight: 6–9½ ounces
FEMALES
total length: 11½–15½ inches, weight: 2½–4½ ounces

Distribution

Statewide,
mostly in south-
central and
southwestern portions



Did You Know?

Once harvested for their fur, long-tailed weasels are no longer legal to trap in the Show-Me State. In addition, farmers used to kill weasels for destroying their chickens. But the species as a whole causes little economic loss to the poultry industry.

Long-tailed weasels are small but mighty and could even be described as quick-change agents. In summer, adults are usually dark brown with yellowish-white fur underneath, a white chin, and a black-tipped tail. By the winter, their coat is much paler. In fact, in northern Missouri sometimes their coat turns all white, except for the black-tipped tail. Weasels live in a variety of habitats but prefer woodlands, brushy fencerows and thickets along water.



LIFE CYCLE

Long-tailed weasels mate in July or August, but with an average gestation period of 279 days, the young are not born until the following April or May. A typical litter is four to eight young that are weaned at 5 weeks.



FOODS

Despite their size, long-tailed weasels are voracious predators. They eat live animals almost exclusively. Some of their favorites include mice, rats, squirrels, chipmunks, shrews, moles, and rabbits, and occasionally small birds, bird eggs, reptiles, amphibians, earthworms, and some insects.



ECOSYSTEM CONNECTIONS

Weasels help control rodent populations — especially mice and rats — and, in turn, serve as prey for horned owls, hawks, foxes, and bobcats.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖



Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:
May 26, 2018–Feb. 28, 2019

Nongame Fish Giggling

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2018–Jan. 31, 2019

Trout Parks

Catch-and-Release:
Nov. 9, 2018–Feb. 11, 2019

TRAPPING

Beaver, Nutria

Nov. 15, 2018–March 31, 2019

Other Furbearers

Nov. 15, 2018–Jan. 31, 2019

Otters, Muskrats

Nov. 15, 2018–Feb. 20, 2019

Rabbits

Nov. 15, 2018–Jan. 31, 2019

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.

HUNTING

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2018–March 3, 2019

Deer

Archery:

Nov. 21, 2018–Jan. 15, 2019

Firearms:

- ▶ Alternative Methods Portion:
Dec. 22, 2018–Jan. 1, 2019

Other Furbearers

Nov. 15, 2018–Jan. 31, 2019

Pheasant

Regular:

Nov. 1, 2018–Jan. 15, 2019

Quail

Regular:

Nov. 1, 2018–Jan. 15, 2019

Rabbit

Oct. 1, 2018–Feb. 15, 2019

Squirrel

May 26, 2018–Feb. 15, 2019

Turkey

Archery:

Nov. 21, 2018–Jan. 15, 2019

Waterfowl

See the Waterfowl Hunting Digest or visit short.mdc.mo.gov/ZZx for more information.



ILLUSTRATION: MARK RATHEL



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Canada geese are common in the Show-Me State year-round. They flock together near lakes, ponds, and wetlands during the cold winter months, looking for open water. Get out and discover these fine-feathered Missouri residents.

📷 by **Noppadol Paothong**

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